Issue 704

K-STATE Research and Extension

Extension Agronomy

eUpdate

07/27/2018

These e-Updates are a regular weekly item from K-State Extension Agronomy and Kathy Gehl, Agronomy eUpdate Editor. All of the Research and Extension faculty in Agronomy will be involved as sources from time to time. If you have any questions or suggestions for topics you'd like to have us address in this weekly update, contact Kathy Gehl, 785-532-3354 kgehl@ksu.edu, or Dalas Peterson, Extension Agronomy State Leader and Weed Management Specialist 785-532-0405 dpeterso@ksu.edu.

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1. The basics of blue-green algae and the risk to livestock

Many areas of Kansas have been extremely hot for extended periods this summer. Couple the heat with abundant sunlight and conditions are ripe for the development of blue-green algae in farm ponds. Blue-green algae produce toxins that pose a health risk to livestock that use these ponds for drinking water.

This article discusses the development of blue-green algae, the risks to livestock, and tips for visual identification. A companion article in this eUpdate explains how to send a water sample to be tested and management options for ponds with blue-green algae blooms.

What are blue-green algae?

Blue-green algae include several different species of photosynthetic cyanobacteria that live in water. Cyanobacteria are bacteria capable of photosynthesis. These cyanobacteria can produce toxins that can sicken or kill livestock.

Occasionally, blue-green algae rapidly reproduce and form blooms, or large colonies, that are visible as a scum on the water's surface. They also may change the water color of a pond. Such blooms of toxic cyanobacteria are often referred to as harmful algal blooms, or HABs. These are typically most severe in stagnant areas where wind disturbance of the water surface is minimal and water temperatures are higher. Floating algal scums may accumulate at the downwind shores of lakes and ponds.

What causes harmful algal blooms?

The causes of harmful algal blooms are not completely understood. They are related to increased nitrogen and phosphorus concentrations in water, but the exact relationships between nutrient concentrations and blooms are complex and difficult to predict.

Although agricultural nutrient runoff is a known risk factor, harmful algal blooms also are found in ponds surrounded by rangeland, where nutrient loading from cropland is rarely an issue. Other environmental factors that may favor the formation of blooms include hot, sunny weather with little wind. Ponds with relatively clear water may be more likely to produce harmful algal blooms due to high sunlight availability, a necessary component for photosynthetic organisms, throughout the water column.

Blue-green algae toxins

The toxins created by blue-green algae species show up as either neurotoxins, or hepatotoxins. Meaning they can damage the nervous system, or affect the liver function of animals. Typically, the first clinical sign noticed in pasture cattle that have consumed neurotoxins are dead cattle. If found early enough, cattle may have muscle tremors, difficulty breathing, seizures, slobbering, and diarrhea. Hepatotoxins can cause an acute death similar to neurotoxins, or lead to delayed issues with liver failure. An example of this would be weight loss and photosensitization and can be recognized by severe sun burns on areas of the body not covered with hair. Since there are several causes of acute death in pasture cattle, contact your local veterinarian for diagnosis. Unfortunately,

there are no known antidotes to these cyanotoxins. Understanding what to look for, and avoiding livestock exposure is important.

Most toxins produced during harmful algal blooms are stored within the cyanobacteria until they die. As the cyanobacteria decompose, they release stored toxins into the water. Toxins are not evenly dispersed in a pond. *Mycrocystis* species, which are generally the most problematic blue-green algae in Kansas, self-regulate their position in the water. This means they are often floating at or near the surface to capture the most sunlight for photosynthesis. When the wind blows in a relatively constant direction, these organisms accumulate on the downwind side of the pond, where toxin concentrations may increase. Other blue-green algae species are less buoyant and may be more widely dispersed in the body of water.

Toxin concentrations can vary dramatically, even at nearby locations in the same pond. Pockets of water that contain lethal quantities of toxins may be within a few feet of areas with low concentrations, making it impossible to determine whether or not a water body is toxic by using a single water sample. **Generally, when finding measurable toxin levels, it is prudent to suspect the entire pond is toxic; do not use for livestock or human drinking water**. Avoid wading and touching the water as these toxins may irritate skin, eyes, and the respiratory system. Some toxin types may cause the meat of fish to be poisonous. Do not eat fish caught from these ponds.

Identification of blue-green algae

A pond containing a harmful algal bloom may be covered with a scum that looks like bright green paint (Figure 1), but other colors are possible, varying from blue-green to grey, and occasionally red or brown. Some types are filamentous and may form slimy strands when many are clinging to each other. Blue-green algae can be distinguished from duckweed by size, as individual duckweed plants are visible without a microscope. To view images of these plants, visit the website: https://aquaplant.tamu.edu/plant-identification/.

Figure 1. Blue-green algae bloom in a freshwater pond. Photo by K-State Veterinary Diagnostic Laboratory.

Water from a pond with a harmful algal bloom often will have an unpleasant smell. Most livestock will avoid water with this smell, but some dogs are attracted by the smell and are at risk of drinking the water or ingesting scum at the edges of the pond. This behavior may lead to lethal exposures.

This eUpdate article and the companion article contain excerpts from the KSRE publication MF-3065, "Identification and Management of Blue-green algae in farm ponds". You can view the entire publication at: https://www.bookstore.ksre.k-state.edu/pubs/MF3065.pdf

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2. Testing and management options for blue-green algae in farm ponds

Many areas of Kansas have been extremely hot for extended periods this summer. Couple the heat with abundant sunlight and conditions are ripe for the development of blue-green algae in farm ponds. Blue-green algae produce toxins that pose a health risk to livestock that use these ponds for drinking water.

This article explains how to send a water sample to be tested and management options for ponds with blue-green algae blooms. A companion article in this eUpdate discusses the development of blue-green algae, the risks to livestock, and tips for visual identification.

Management options for infected ponds

If a pond contains a harmful algal bloom, there are few choices for the livestock owner. Several options are discussed below:

- **Provide an alternative water source for livestock**. Using well water may necessitate drilling a well, which is not always an option. It takes time to have the well drilled, have the water tested, and set up a pumping unit and stock tank. Hauling water is expensive and time consuming but may be the only feasible way to supply clean water to livestock. Animals can be moved to another pasture with clean pond water or access to another water source. The duration of harmful algal blooms is difficult to predict and is influenced by weather conditions. The condition may last from days to months.

- **Use copper sulfate to kill the blue-green algae**. This chemical, however, will also kill competing organisms such as green algae, which help keep blue-green algae in check. Copper does not break down, but remains in pond sediment, where it can affect pond ecology for many years. Sheep are sensitive to copper. Hazardous levels of copper may remain in water and plants growing near treated ponds for several years after treatment. As blue-green algae die after the chemical application, toxins are released from the organisms and are dispersed more widely making the possibility of toxicity even higher. Keep livestock and other animals away from the treated water source. It is recommended to test the water 1-2 weeks after treatment to ensure the toxins have broken down before reintroducing livestock to the area.

- **Reduce the amount of sunshine available to the blue-green algae**. Increasing turbidity (cloudiness of the water) through stirring up bottom sediment is not recommended. Instead, spreading a buoyant straw such as wheat or barley straw in a thin layer across the surface will shade the algae and may result in a decrease in the blue-green algae bloom size. As the straw sinks, it needs replaced. This method of control will have little lasting effect on the pond. Addition of a pond dye is another option. Dyes inhibit the growth of algae by reducing the amount of available sunlight and are safe for fish, humans, and livestock. Adding dye is more of a preventative measure to keep the algae from growing and reproducing rather than a "fix" after a bloom occurs.

- **Solar-powered pond aerators.** This aerator can be mounted on the shore and are suitable for small or large ponds. They work well in locations that do not have electricity nearby. This

option has a less negative impact on the environment compared to chemical control measures but is not a complete fix of the problem.

How long will the harmful algal bloom last?

Cooler, cloudy weather with high wind speeds generally shortens the duration. Before allowing livestock to drink water from a pond that was previously determined to have a harmful algal bloom, another water test should be taken to make certain that hazardous concentrations are no longer present. Harmful algal blooms are serious threats to livestock health and may be fatal. Testing suspect water sources is important to minimize livestock loss and poor animal performance. Upon confirmation of a harmful algal bloom, the best management practice is to find a different water source.

Testing for blue-green algae

If a producer suspects the presence of blue-green algae, a water sample can be sent to the Kansas State Veterinary Diagnostic Laboratory for testing. Because toxin concentrations can fluctuate widely within the same pond, animals drinking from the pond may or may not consume significant levels of the toxin. Because toxin consumption cannot be forecasted with any degree of accuracy, water from a pond that tests positive for blue-green algae is considered unsafe for livestock consumption. The level of toxin in the water is generally not analyzed due to the cost of testing and because toxin concentrations vary so much by location and time within the same pond.

How to Collect a Water Sample to Submit for Blue-green Algae Detection

1. Find a location in the pond where algae is most concentrated. This may be a scummy area along the pond shoreline, or a patch of discolored water. If in doubt as to the best location, sample on the downwind side of the pond. Inlets and coves, where wind disturbance is minimal, are also good sites for collecting a sample.

2. Use a clean plastic bottle with a screw lid to collect the sample. The bottle does not have to be sterile. A 20-ounce or 1-quart soft-drink bottle will work well. Rinse the bottle with pond water before collecting the sample. If present, be sure to include some of the pond scum in the sample. Avoid touching the water or wear gloves while collecting samples.

3. Fill the bottle with pond water, screw on the lid, and immediately place it into a cooler with ice or transport it to a refrigerator.

4. Keep the sample cool, but not frozen, until it is shipped to the lab. Although the sample can be kept cool for a few days before submitting it to the lab, it is recommended that it be shipped the same day it is collected. It is preferable to avoid collecting and shipping samples on days when they will arrive at the lab on the weekend and sit 1 to 2 days before being processed.

5. Fill out a sample submission form that includes your name, preferred contact method, and contact information (phone, fax, email, or address). A submission form can be found at: http://www.ksvdl.org/docs/submission-forms/Bovine_Submission_Form.pdf. Fill out the owner/producer section of the form. Specify the test you are requesting as "blue-green algae" in the "Other tests not listed" line at the bottom of the form. Add any information you may

need to identify where the sample was taken. Place the form in a re-sealable zipper bag so moisture from the ice packs does not cause it to disintegrate or the ink to run.

6. Wrap the joint between the lid and the bottle with tape to seal it. Put the bottle in a re-sealable zipper bag and seal it. Place the bottle in a box or small polystyrene foam container and surround it with ice packs. Place enough packing insulation and ice packs around the bottle to keep it cool until it arrives at the lab. Multiple bottles can be included in one shipping container, but each should be clearly marked with the site where it was collected so results can be matched with water source.

To view a two-minute video illustrating how to collect a water sample for blue-green algae, go to https://www.youtube.com/watch?v=ZRNWzFwKKjE

Once the sample is properly collected, ship the water sample to:

Kansas State Veterinary Diagnostic Laboratory
Mosier D-117
1800 Denison Avenue
Manhattan, KS 66506-5601

Results should be available within 24 to 48 hours after the sample arrives.

For more information, please contact the Kansas State Veterinary Diagnostic Laboratory at 866-512-5650 or email clientcare@vet.k-state.edu

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3. Strategies for improving corn harvest efficiency

With the warm, dry weather this growing season, corn harvest may be earlier than expected. While harvest efficiency is important every year, it will be especially critical this year with potentially lower yields due to higher temperatures and below-average rainfall in some areas (Figure 1). Producers spend considerable time and money to protect their corn yield. However, some of the biggest yield losses can occur during harvest operations.

Figure 1. The hot, dry weather in 2018 has reduced pollination and grain fill, potentially reducing the yield. Photo by Gretchen Sassenrath, K-State Research and Extension.

Harvest inefficiency can reduce overall yield and can cause future problems because of volunteer corn (Figure 2). Volunteer corn may have some value by increasing the soil organic matter, providing coverage to reduce soil erosion, or providing potential forage for grazing livestock. However, volunteer corn may cause problems for wheat planting following corn harvest, or in a wheat-corn-fallow cropping system by using valuable soil moisture and nutrients needed to promote fall tillering in wheat. Volunteer corn can also provide a "green bridge" of vegetation for insects that can carry viral diseases to wheat.

Figure 2. Extremely thick stand of volunteer corn, resulting from grain lost during harvest operations. Photo by Gretchen Sassenrath, K-State Research and Extension.

The biggest problem with having a dense stand of volunteer corn is that it indicates a significant loss of corn grain during the harvest operation. It will never be possible to harvest 100% of the grain. However, it is possible to improve the efficiency of harvest and the yield by paying careful attention to harvest operations. By taking steps to improve the harvest efficiency, grain loss can be reduced.

Several factors may contribute to poor harvest efficiency in corn. Most of the kernel loss that occurs at harvest time is due to mechanical limitations with combine settings. A combine performs three major actions during the harvest operation: picking, threshing and cleaning. Grain loss can occur at each of these stages. A detailed description of harvesting efficiency can be found in the KSRE publication "Corn Production Handbook" (https://www.bookstore.ksre.ksu.edu/pubs/c560.pdf) beginning on page 36.

Estimating yield loss

Yield loss estimates are made by counting the number of kernels per square foot and dividing by 2 (Figure 3). The number of kernels per square foot is approximately twice the bushels per acre lost. To estimate the yield loss, count the number of kernels in a square foot, and divide by 2 (or multiple by 0.5). For example, a count of 20 kernels per square foot would indicate 10 bu/acre lost during harvest.

While it may be time-consuming to count kernels over a large area, it is important to get a good estimate of yield loss by counting kernels and ears from several locations in the field, and also to include both header and thresher losses. Changes can then be made in the harvest operation and to the combine to improve the harvest efficiency. It is also important to check for field losses at different times of the day when harvesting and on different fields. Changes in weather conditions (moisture and temperature) or other factors may impact harvest efficiency.

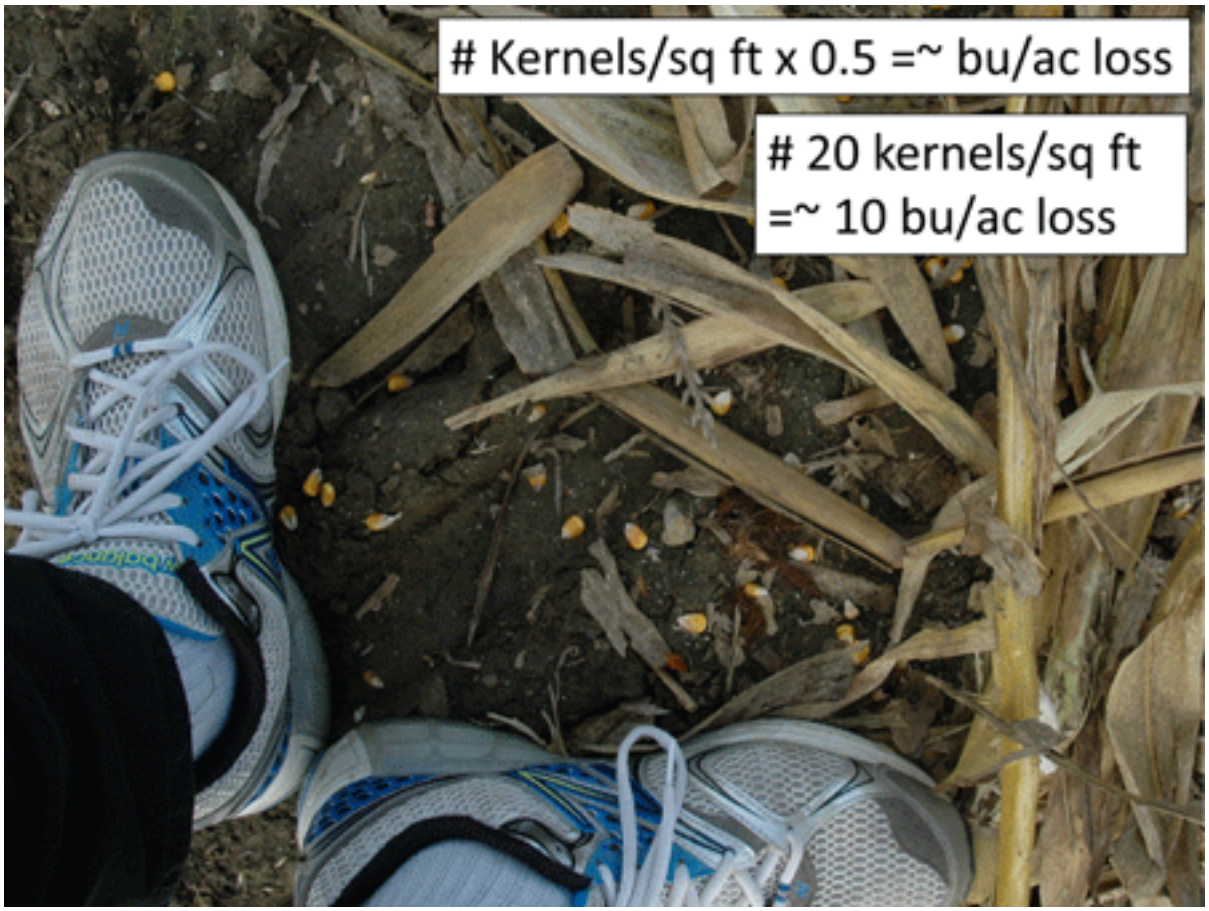

Figure 3. Estimate corn loss during harvesting by counting the number of kernels in a square-foot area. The number of kernels per square foot is approximately twice the number of bushels per acre lost. Count the number of kernels and divide by two – this is the bushel/acre yield loss. Several areas in a field should be checked. Photo by Gretchen Sassenrath, K-State Research and Extension.

Combine settings

Ground speed is one of the most important factors that a combine operator can control to improve harvest efficiency. By matching combine ground speed to crop throughput and harvest conditions, the operator can improve harvest efficiency. Excessive ground speed results in greater losses at almost all stages of the harvesting operation. Ground speed that is too slow may fail to keep the combine operating at full capacity, decreasing the threshing efficiency, and increasing the specific fuel consumption (gallons/bu).

Header loss

Header loss occurs when kernels do not make it into the machine. Both biological and mechanical factors contribute to header loss. Corn that has lodged or is too dry may shatter, causing whole ears to be lost. Deck plates that are set too widely may cause excessive butt shelling of the ears. Adjusting both the header speed and relative ground speed can reduce header loss; slower may be better.

To measure header loss, harvest a portion of the field and then place a marker toward the rear of the combine and in front of the tailings discharge. Back the machine up so that the front of the header is even with the marker. Grain on the ground in the area between the header and the unharvested portion of the field is due to header loss. To determine the loss per acre, count the number of kernels or ears on the ground between the front of the combine and the unharvested corn and estimate the yield loss.

Adjustments to minimize header loss

1. Adjust the gathering snouts so that the center snout is just touching the ground when the gathering chains are 2 inches above the ground. Working out from the center, each successive snout should be about 1 inch lower than the adjacent snout. Drive with the center snout just touching the ground. This will insure that all snouts float at ground level when combining over rough ground.

2. Gathering chains should extend at least ¼ inch beyond the snapping plate when measured at the front of the plate. Control chain speed so that stalks are guided into the rolls without uprooting.

3. Snapping rolls should be set according to stalk thickness with speed correlated closely to ground speed so that the ear is snapped in the upper third of the roll. This helps reduce ear loss.

4. Deck plates should be set as wide as possible without losing ears or shelling corn off the ear. This reduces the amount of trash taken into the machine. The spacing between the plates should be 1/8 to 3/16 inch tighter at the front of the plates than at the rear. In highly variable crop conditions, paying close attention to deck plate spacing has one of the largest potentials for payback. Newer headers with automatic or hydraulically actuated deck plates have the potential to significantly reduce header losses.

5. Trash knives should usually be set as close to the rolls as possible to prevent wrapping.

Threshing loss and kernel damage

As with most other crops, cylinder or rotor adjustment has a great effect on corn quality. As much as 80% of corn kernel damage occurs during the shelling process, so careful management at this point will produce dividends throughout storage and drying. Moisture content has a large effect on the amount of damage, with fines increasing rapidly at high moisture. If possible, delay harvest delayed until moisture is between 20-25%.

Concave clearance and cylinder or rotor speed require careful adjustment, and although a great variation in hybrids exists, a few rules of thumb have been developed. Over-shelling the grain (by

having the cylinder or rotor speed too high, or the clearance too tight) not only produces excess fines, but also consumer excessive power and fuel. A good way to adjust the cylinder or rotor is to begin with the clearance and speed recommended by the manufacturer (or in the middle of the suggested range), then make small changes after checking the discharge of the machine.

Adjustments to minimize threshing loss and damage

1. Concave clearance should be set so that cobs fracture into halves or pie-shaped segments. If the cobs are broken into smaller halves or quartered pieces, higher cylinder or rotor speeds will be necessary to remove the grain, which in turn can contribute to grain damage, loss, and decreased sample quality.

2. Reduce cylinder or rotor speed to the point that an occasional kernel is left on the cob. Several studies have shown that the best compromise between unshelled grain and excessive kernel damage occurs when about 0.2% of the kernels remain on the cob.

Keep in mind that the most significant contributing factor to grain damage is cylinder or rotor speed. In addition to grain damage, excessive cylinder or rotor speed can lead to increased levels of foreign material in the grain sample.

Sieve and chaffer settings

Machinery settings can affect grain losses at the sieve and chaffer. Grain losses may be reduced by adjusting fan speed. If there is too much trash, the kernels stay in the trash through the straw walkers in a conventional combine or over the cleaning shoe in a rotary design. The kernels are then thrown out of the machine in the tailings. This can results in a windrow effect when the corn kernels germinate (Figure 4).

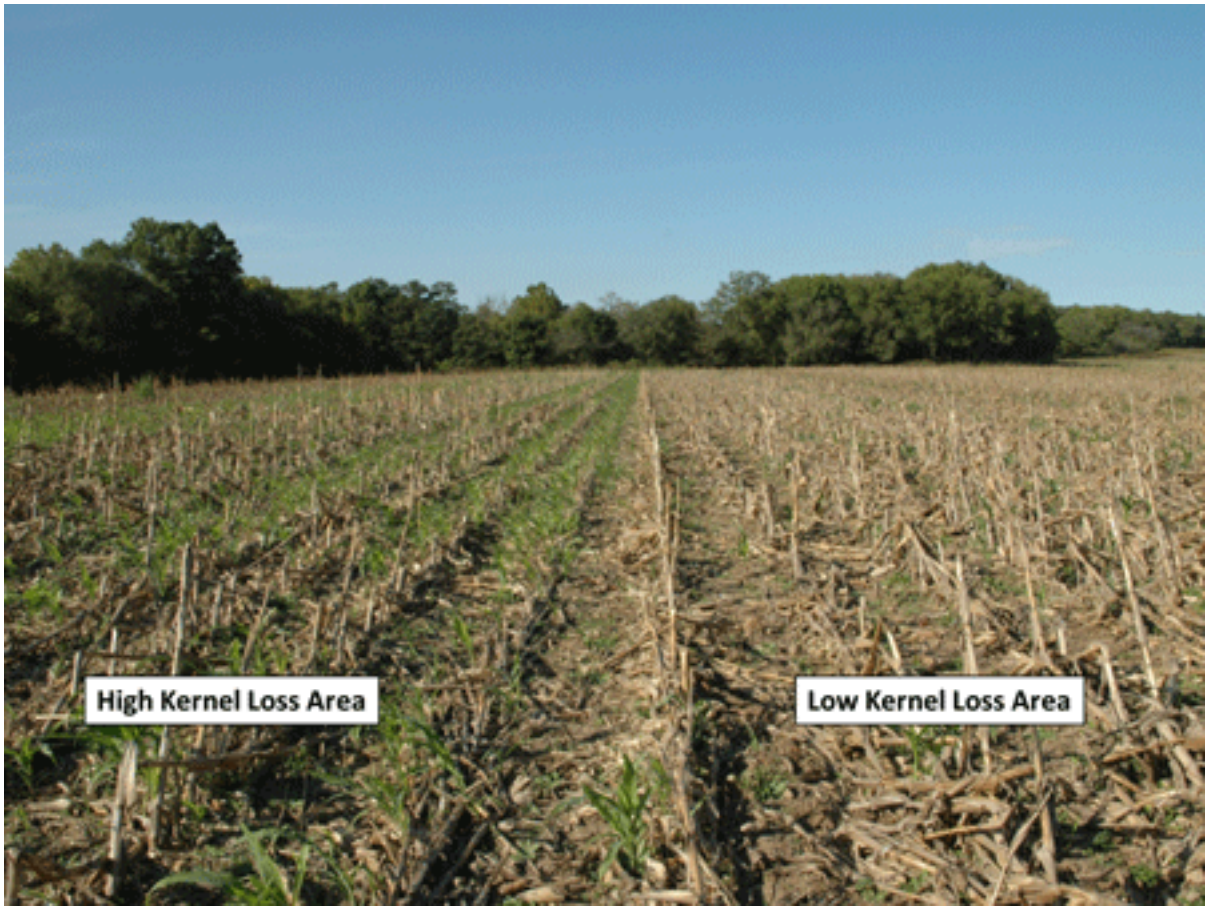

Figure 4. Windrowing effect from grain loss directly behind the combine. Photo by Gretchen Sassenrath, K-State Research and Extension.

Careful adjustment of the combine can improve this. If the air speed is too high, too many kernels are lost. Conversely, if air speed is too low, unnecessary foreign material is retained in the grain resulting in quality dockage at the point of delivery. Adjust chaffer and sieve to minimize grain losses in the tailings. Yield losses from cleaning operations can be measured by counting kernels behind the combine. Especially look for windrowing effects if an adequate spreader is not used.

Summary

Efficiency at each stage of the production cycle is important for growing and harvesting the best yield possible. In challenging years such as 2018, it is especially critical to be aware of equipment calibration to increase the harvest efficiency.

In addition to the combine losses described here, additional losses can occur during transfer events. While this may look substantial, it is usually not very high across the entire field.

There is a free mobile app from Ag PhD available to estimate harvest losses based on the kernel

count per square foot. The download links are here: iOS and Android. The app allows the user to select the crop and input the number of seed or kernels counted from an area on the ground. Harvest loss is calculated from this count.

While harvest efficiency will never be 100% and it is important to complete the harvest in a timely fashion, paying attention to details during harvest can increase profitability. A normal harvest loss rate to aim for is 1 to 2%. Careful attention to equipment, harvest conditions, and harvest operations can minimize yield losses at harvest time and put more corn in the bin.

Additional information is available in the KSRE publication "Corn Production Handbook" (https://www.bookstore.ksre.ksu.edu/pubs/c560.pdf).

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4. Update on insect activity in grain sorghum - July 27, 2018

Chinch bugs continue to feed and develop all around north central Kansas. However, growing conditions have improved significantly and thus the plants are much better able to tolerate this feeding.

As sorghum reaches the whorl stage, corn leaf aphids are becoming more common (Figure 1). These aphids may cause some concern as their honeydew production will occasionally be so thick and sticky as to retard the heads extending up from the whorl. This is not typically a field-wide problem, just a few places or plants in a field and these aphids are a good source of nutrition for beneficials.

Figure 1. Corn leaf aphids in grain sorghum. Photo by J.R. Ewing, K-State Research and Extension.

In addition, as sorghum leaves grow out of the whorl stage, they are showing signs of feeding. Fall armyworms have been feeding as small larvae within the whorl and as plants grow out and the leaves unfurl, these leaves have a very ragged appearance. Many of these 'ragworms' have finished feeding and are now pupating in the soil. Thus, spraying is not necessary as the damage is done. Even if the worms are still in the whorl, they will not be contacted by the spray. This whorl-stage leaf feeding doesn't negatively impact the plant, or yield. There will probably be a least one more generation of fall armyworms and these may be more problematic if they start feeding in the head

between flowering and soft dough stages. Feeding on these developing kernels is generally considered to cost 5% loss/worm/head.

Mature fall armyworm feeding in whorl

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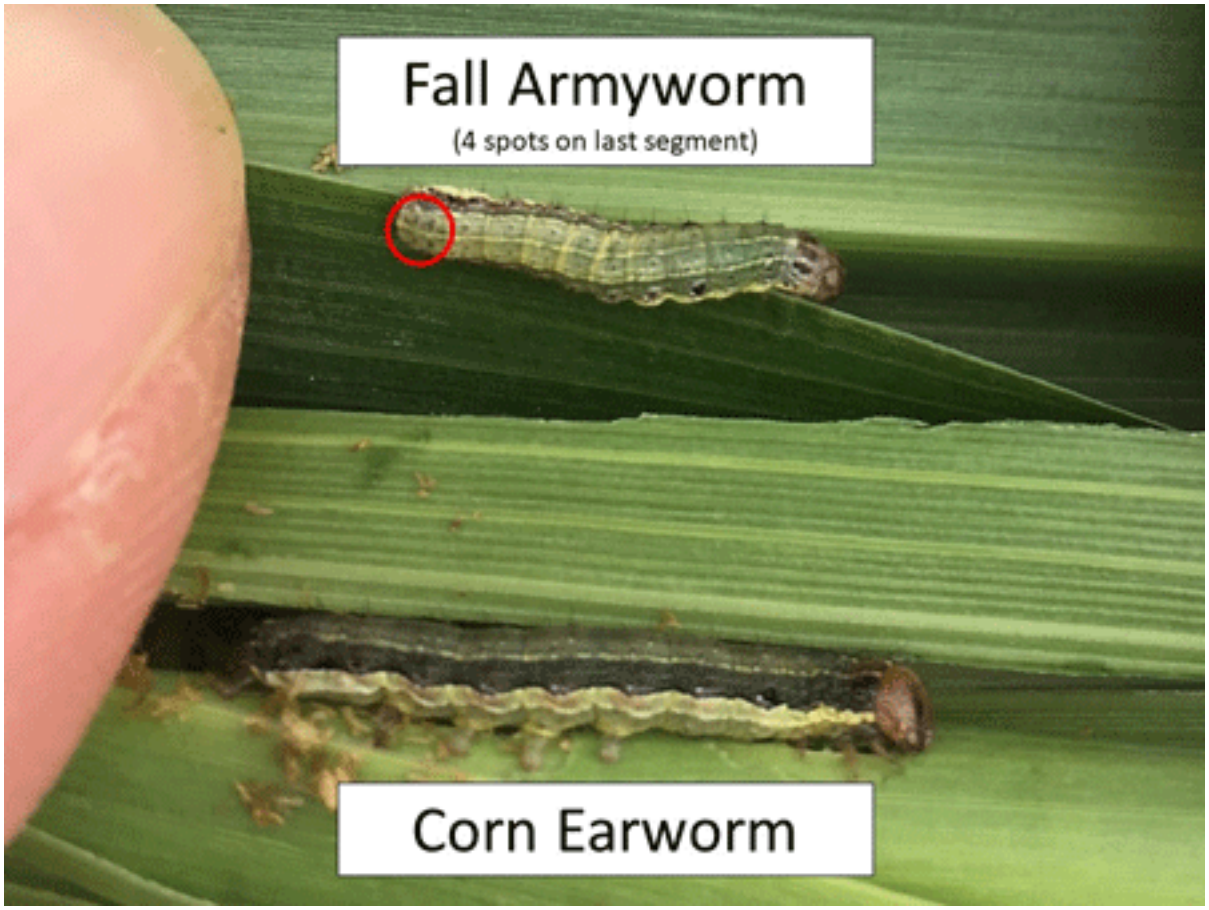

For more information regarding sorghum insect pest management, please refer to the KSU 2018 Sorghum Insect Management Guide: https://www.bookstore.ksre.ksu.edu/pubs/mf742.pdf

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5. Great Plains Canola Production Handbook - Updated for 2018

Canola is a type of edible rapeseed genetically low in erucic acid and glucosinolates. The seeds are a source of healthy cooking oil and high-protein meal for livestock. A growing number of winter-hardy varieties, suitable for the Southern Great Plains, are commercially available.

Canola production in the Great Plains has changed dramatically over the years. New practices to improve the consistency with which we grow the crop are being tried, modified, and implemented continuously. To reflect the most recent changes in canola seeding practices, weed management, diseases, and more, K-State Research and Extension and partners have updated the Great Plains Canola Production Handbook. The last update was completed in 2012. Funding for the project was provided by Kansas State University and the Promote Canola Acres Program, administered by the Great Plains Canola Association.

This publication discusses aspects of canola production including:

- Field and variety selection
- Seeding rates
- Stand establishment
- No-till production
- Growth and development
- Fertility management
- Weed management
- Diseases
- Insect pests
- Grazing
- Harvest
- Grain storage
- Cost-return projections
- Crop insurance

This valuable and comprehensive resource is available online through the K-State Research and Extension Bookstore at https://www.bookstore.ksre.ksu.edu/pubs/MF2734.pdf

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Great Plains Canola Production Handbook

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

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6. Corn Production and Technology Field Day, August 16

K-State Research and Extension and the Central Kansas Extension District are hosting a field day on August 16 highlighting variable rate corn seeding, satellite imagery, high-speed planters, mobile devices, and myFields as well as other topics of interest to corn growers.

The field day will be held at Knopf Farms, 6229 S. Kipp Rd, which is 1 mile west and 1 mile north of Gypsum, KS. The field day will start at 9:00 a.m. and conclude at noon with a meal sponsored by Kansas Corn. Participants should RSVP by August 13 for the meal by calling the CKD-Salina office at 785-309-5850 or e-mail tmaxwell@ksu.edu.

Speakers include K-State Research and Extension agronomists Ignacio Ciampitti and Stu Duncan; Brian McCornack, Extension entomologist; Ajay Sharda, Extension agriculture engineer; cooperators Justin Knopf and Garrett Kennedy, as well as representatives from Kansas Corn.

All producers, consultants, and agri-business representatives are encouraged to attend this educational event. For more information about the field day, contact Tom Maxwell, Crop Production Agent at the CKD-Salina office (contact info listed above).

7. North Central Experiment Fall Field Day, August 21 in Belleville

All crop producers are invited to attend the **2018 North Central Experiment Field Day** on **Tuesday, August 21, at 6:00 p.m**. The event will be held at the Belleville experiment field located approximately two miles west of Belleville on Hwy. 36 on the north side of the road.

This is a free event and no pre-registration is required. There will be a catered meal at the end of the program. Topics and speakers will include:

- **Mesonet 101 and the new weather station** – Christopher "Chip" Redmond, KSU Mesonet Manager
- **Re-visiting summer row crop seeding recommendations (corn, soybean, and sorghum)** – Ignacio Ciampitti, Crop Production and Cropping Systems Specialist
- **Dicamba/Round-up Ready Sentinel plot and season review** – Andrew Esser, Agronomist-in-charge, North Central Kansas Experiment Field

K-STATE Research and Extension

KSU NCK Experiment Field
Fall Field Day

August 21, 2018
KSU Experiment Field Belleville Location
2 miles west of Belleville on Hwy 36
6:00 P.M. Sharp

Tour Topics:

-Mesonet 101 and the New Weather Station at the Field
Christopher "Chip" Redmond, KSU Weather Data Library/Mesonet Manager

-Re-visiting Summer Row Crop (corn, soybean, and sorghum) Seeding Rate Recommendations
Dr. Ignacio Ciampitti, Cropping Systems Professor K-State

-Dicamba/RR Sentinal Plot and Season Review
Andrew Esser, Agronomist-in-Charge NCK-Exp. Fields

Free Event

No registration required
Catered Dinner to Follow Program
Questions Call: 785-335-2836
Andrew Esser, Agronomist-in-Charge

Meeting sponsored by: K-STATE Research and Extension

8. Winter Canola Preplant School, August 28 in Wichita

Winter canola yields in Kansas were down in 2018 yet better than expected in some areas. On August 28, producers can learn more about how canola performed in 2018 and what it takes to raise a successful crop.

A winter canola preplant school will be held in Wichita at the Sedgwick County Extension Education Center, 7001 W. 21st Street N., beginning at 10:00 a.m. The event is free but those interested in attending should RSVP by calling 316-660-0143 or jfees@ksu.edu by Friday, August 24 so that an accurate count can be made for lunch.

Ongoing research has shown ways in which producers can be more cost efficient in canola production. K-State has been working diligently to better understand seeding rate and row spacing questions. In addition, varieties continue to change rapidly and we are excited about some of the newest commercial varieties available to growers.

There have been some ups and downs in the industry recently, but through these experiences we have come to understand a great deal about why we still need canola in our rotations.

Topics for discussion at the preplant school include what to do -- and what not to do -- in canola production, seeding rates and row spacing, variety and hybrid performance, winter survival, and economics. Information on marketing the crop will also be available.

Mike Stamm, Canola Breeder
mjstamm@ksu.edu

9. Southwest Research-Extension Center Fall Field Day, August 23 in Garden City

Kansas State University's Southwest Research-Extension Center will host its Field Day 2018 on Thursday, Aug. 23 at 4500 E. Mary St. in Garden City. The day features field tours, indoor seminars, and seed, implement and farm supply company displays.

Registration and vendor exhibits open at 8 a.m. with the program highlighting K-State research updates at 9:15 a.m. A complimentary lunch will be provided.

Field tours include:

- Weed control in irrigated corn – Randall Currie
- Weed control in irrigated grain sorghum – Vipan Kumar and Randall Currie
- Update on mobile drip irrigation – Jonathan Aguilar
- Diversified annual forage crop rotations – John Holman
- Perspectives on forbs in Kansas grasslands: Who they are, what they do, and why they are important – Bob Gillen and Anthony Zukoff

Seminars include:

- Insect research update – Sarah Zukoff
- Pesticide safety update – Sarah Zukoff
- Core hour for commercial pesticide license – Shawn Rich, Kansas Dept. of Ag.

More information is available at www.southwest.k-state.edu or email rscurrie@ksu.edu.

K-STATE
Southwest Research-Extension Center
FIELD DAY 2018

Thursday, August 23, 2018
4500 E. Mary St. • Garden City, KS
Registration 8:00 a.m., Program 9:15 a.m.
Lunch Provided

Field Tours

Weed Control in Irrigated Corn
Randall Currie
Weed Control in Irrigated Grain Sorghum
Vipan Kumar and Randall Currie
Update on Mobile Drip Irrigation
Jonathan Aguilar
Diversified Annual Forage Crop Rotations
John Holman
Perspectives on Forbs in Kansas Grasslands: Who they are, what they do, and why they're important
Bob Gillen and Anthony Zukoff

Seminars

Insect Research Update
Sarah Zukoff
Pesticide Safety Update
Sarah Zukoff
Core Hour for Commercial Pesticide License
Shawn Rich with the Kansas Department of Agriculture

Displays

Local Seed, Implement, and Farm Supply Representatives

For More Information Contact
rscurrie@ksu.edu

K-STATE
Research and Extension

Kansas State University is committed to making its services, activities and programs accessible to all participants. If you have special requirements due to a physical, vision or hearing disability, contact Randall Currie, 620-276-8286.
Kansas State University Agricultural Experiment Station and Cooperative Extension Service
K-State Research and Extension is an equal opportunity provider and employer.

10. Kansas River Valley Fall Field Day - August 14

All crop producers are invited to attend the **2018 Kansas River Valley Experiment Field Day** on **Tuesday, August 14 at 5:00 p.m**. The field day will be held at the Rossville field located 1 mile east of Rossville on Hwy. 24 on the south side of the road.

This is free event for all and will included a barbeque meal sponsored by Wilbur-Ellis. Presentations will be geared to having a more profitable and efficient crop production operation. Topics and speakers will include:

- **Dr. Anita Dille – Integrating cover crops into your weed management plans**
- **Dr. Nathan Nelson – Utilizing cover crops for erosion control**
- **Dr. Stu Duncan – Early weed control strategies in corn and soybeans**
- **Dr. Ignacio Ciampitti – Evolution of production management practices for corn and soybeans**

To pre-register for the catered meal, please call Michelle Wilson at the Shawnee County Extension office at 785-232-0062, Ext. 100, by **5:00 p.m. on Monday, August 13**. Additional field day sponsorship includes the Kansas Corn Commission. Certified Crop Advisor and Commercial Pesticide Applicator credits have been applied for.

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Kansas State Research & Extension

KSU Agronomy

Kansas River Valley Experiment Field
2018 Fall Field Day

Tuesday, August 14 - **5:00 p.m. Sharp!**

Rossville Field — 1 mile east of Rossville on U.S. Highway 24 on the south side of the road

Dr. Anita Dille – Integrating cover crop into your weed management plans

Dr. Nathan Nelson – Utilizing cover crops for erosion control.

Dr. Stewart Duncan--Early weed control strategies in corn & soybeans.

Dr. Ignacio Ciampitti – Evolution of production management practices for corn & soybean crops.

To pre-register for the catered BBQ meal sponsored by Wilbur-Ellis, call Michelle Wilson at the Shawnee County Extension Office at 785-232-0062 — Ext. 100 by 5:00 p.m. on Monday, August 13. Additional Field Day sponsorship in-part by the Kansas Corn Commission. **Certified Crop Advisor and Commercial Pesticide Applicator Credits have been applied for.**

11. East Central Experiment Field fall field day - August 15

The East Central Experiment Field in Ottawa will host its fall field day on **Wednesday, August 15**. The event will begin at 9:00 a.m. with registration, coffee, and doughnuts. The field day program will begin at 9:30 a.m. A complimentary lunch will be served at noon to conclude the event.

Field day topics and speakers include:

- **Dr. Anita Dille – Integrating cover crops into your weed management plans**
- **Dr. Nathan Nelson – Utilizing cover crops for erosion control**
- **Dr. Stu Duncan – Early weed control strategies in corn and soybeans**
- **Dr. Ignacio Ciampitti – Evolution of production management practices for corn and soybeans**

The field day is located at the East-Central Experiment field near Ottawa. From I-35 at the Ottawa exit, go south 1.7 miles on Hwy 59, then east 1 mile, and south 0.75 mile.

Certified Crop Advisor and Commercial Pesticide Applicator credits have been applied for. Please contact the East-Central Research Station at 785-242-5616 at least two days prior to the event if accommodations are needed for persons with disabilities or special requirements. The field day is sponsored in part by the Kansas Corn Commission.

Kansas State Research & Extension

KSU Agronomy Ottawa Field Day

Wednesday, August 15th, 2018

East-Central Experiment Field

Ottawa, KS

From I-35 at Ottawa: South 1.7 miles on 59 Hwy, East 1.0 mile, South 0.75 mile

9:00 .....Registration, coffee, and doughnuts

9:30 .....Program begins

Dr. Anita Dille – Integrating cover crop into your weed management plans

Dr. Nathan Nelson – Utilizing cover crops for erosion control

Dr. Stewart Duncan--Early weed control strategies in corn & soybeans

Dr. Ignacio Ciampitti – Evolution of production management practices for corn & soybean crops

12:00 .....Lunch

Certified Crop Advisor and Commercial Pesticide Applicator Credits have been applied for. Please contact the East-Central Research Station at 785-242-5616 at least two days prior to this event if accommodations are needed for persons with disabilities or special requirements. Field Day sponsored in-part by the Kansas Corn Commission.

Kansas State University Research & Extension is an Equal Opportunity Provider and Employer